

Abstract of the Disclosure

This patent describes a new method and apparatus which allows optical cavities to be used simply and effectively as absorption cells for the purpose of performing sensitive absorption spectroscopy. This method introduces a continuous-wave light beam into the cavity using an off-axis cavity alignment geometry to systematically eliminate the resonances commonly associated with optical cavities, while preserving the absorption signal amplifying properties of such cavities. This reduces the complexity of the apparatus considerably compared with other optical cavity-based absorption methods when applied in conjunction with either cavity ringdown spectroscopy or integrated cavity output spectroscopy. This method can also be used to characterize other optical loss processes occurring within the cavity such as scattering or total extinction coefficients, and to determine the losses due to the cavity mirrors themselves (reflectometry).